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Notice of Allowability	Application No.	Applicant(s)	
	10/771,041	SODICKSON, DANIEL K.	
	Examiner	Art Unit	
	Tiffany A. Fetzner	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/15/2004.
2. ☒ The allowed claim(s) is/are 1-39.
3. ☒ The drawings filed on 12/15/2004 figs 1-4c are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☒ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☒ hereto or 2) ☒ to Paper No./Mail Date 20050310.
 - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 20050310.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>06/30/2004</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Examiner's Comment

Specification

1. The examiner accepts the new abstract submitted November 1st 2004.

Drawings

2. The drawing corrections to **Figures 1, 2, 3a, 3b, 3c, 3d, 3e, 4a, 4b, 4c** identifying each of these figures as prior art is accepted and approved by the examiner.
3. A New set of corrected drawings are required in this application because the official draftsman has objected to the drawings submitted **February 3rd 2004** [See the attached PTO 948 Notice of Official Draftsman's Review, which is attached to this action.
4. A **complete set of NEW FORMAL DRAWINGS** including any and all examiner approved drawing changes, (i.e. the replacement pages for figures 1-4c which identify those figures as prior art), that have occurred during this examination are now required. The new figures must reflect both the examiner-approved changes, and the corrections required by the PTO 948 form. [See the attached PTO 948 form of the Official Draftsman's Review.]
5. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Declaration Under 37 CFR 1.131

6. The **Declaration Under 37 CFR 1.131** filed on November 1st 2004 under 37 CFR 1.131 is sufficient to overcome the **Ehnholm et al.**, US patent 6,366,092 B1 issued April 2nd 2002, filed December 23rd 1999 reference. Accordingly all rejections concerning this reference have been withdrawn.

The following is an examiner's statement of **Reasons for Allowance**:

7. With respect to **Amended independent method claim 1**, and corresponding **amended claim 25**, which were amended by applicant to overcome the grammatical objection of the last office action.

8. These claims are considered by the examiner to be allowable over the **prior art of record** because the **prior art of record** does not disclose or suggest prior to **December 23rd 1999**, (i.e. the effective date of applicant's 37 CFR declaration under section 1.131 which removes the **Ehnholm et al.**, US patent 6,366,092 B1 issued April 2nd 2002, filed December 23rd 1999 reference cited below from being available as prior art under **35 USC 102 (e)**), the **entire combination of limitations as set forth by applicant, of:** an MRI method/apparatus comprising the combination method steps or components of:

Claim 1 ---A method of forming a magnetic resonance image, comprising:
providing a plurality of RF receiving coils each said RF receiving coil having a different spatial sensitivity;
applying one or more RF pulses in combination with one or more gradient encoding steps;
measuring MR signals indicative of nuclear spins caused by the step of applying in the plurality of receiver coils to form a set of MR signals;
generating a set of encoding functions representative of a spatial distribution of receiver coil sensitivities and spatial modulations corresponding to the gradient encoding steps;
transforming the set of encoding functions to generate a new set of functions representative of distinct spatial positions in an image; and
applying the new set of functions to the set of MR signals to form the magnetic resonance image." ---

Claim 25 --- An apparatus for forming a magnetic resonance image, comprising: means for applying one or more RF pulses in combination with one or more gradient encoding magnetic fields;
a plurality of RF receiving coils, each said RF receiving coil having a different spatial sensitivity and configured to measure RF signals indicative of nuclear spins of nuclei in a test subject; and

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a controller, said controller being configured to generate a set of encoding functions representative of a spatial distribution of receiver coil sensitivities and spatial modulations corresponding to the gradient encoding steps; transforming the set of encoding functions to generate a new set of functions representative of distinct spatial positions in an image; and applying the new set of functions to the set of MR signals to form the magnetic resonance image. ---

It is the combination of limitations in each of these amended independent claims taken as a whole that constitutes both the novelty and non-obviousness of applicant's amended independent claims.

9. **Claims 2-24 and 26-39** are considered to be allowable over the **prior art of record**, because they depend on **allowable amended independent claims 1 and 25** respectively.

10. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Prior art made of Record

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) Sodickson PCT publication WO 98/21600 published 22 May 1998, which is the foreign English equivalent of **Sodickson** US patent 5,910,728.

B) Jakob et al., US patent 6,289,232 B1 issued September 11th 2001, filed March 30th 1998.

C) Sodickson US patent **5,910,728** issued June 8th 1999, **filed November 12th 1996**. This reference is not prior art to the claims of the instant application, because it is applicant's own earlier work, was issued less than 1 year before the filing of applicant's parent application 09/524,217 filed March 14th 2000, and does not qualify as a prior art reference under 35 USC 102 (b). It is noted only for the purposes of a complete record. **The examiner notes that Sodickson US patent 5,910,728 is also the reference**

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referred to by applicant in the November 1st 2004 Declaration filed under 37 CFR 1.131 as Exhibit B (i.e. the US patent issued to Sodickson that was originally filed on November 12th 1996.)

D) Sodickson US patent 6,717,406 issued April 6th 2004, which is applicant's patent from the parent application 09/524,217 filed March 14th 2000. This reference is not prior art to the claims of the instant application, it is noted for the purposes of a complete record.

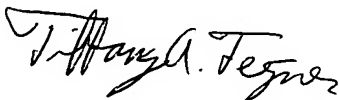
E) Sodickson US patent application publication 2002/0158632 A1 published October 31st 2002, which is the original publication of applicant's parent application 09/524,217 filed March 14th 2000. This reference is not prior art to the claims of the instant application, it is noted for the purposes of a complete record.

F) Ehnholm et al., US patent 6,366,092 B1 issued April 2nd 2002, filed December 23rd 1999. This patent is not available as prior art against the claims of the instant application because applicant has successfully sworn behind the filing date of this reference. Therefore, all of the previous rejections concerning this reference have been rescinded.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(703) 872-9306**.



TAF
March 10, 2005



for Diego Gutierrez
Supervisory Patent Examiner
Technology Center
Principal Examiner